

Journal of

Molecular and Cellular Cardiology

Editor-in-Chief:

L. H. Opie

Associate Editors:

E. Coraboeuf

M. Endo

V. J. Ferrans

A. M. Katz

W. Kübler

H. E. Morgan

W. G. Nayler

J. Schaper

A. Schwartz

B. Swynghedauw

U.T.C.
MAR 30 1983
LIBRARY

Volume 14, January to December 1982

Academic Press

A Subsidiary of Harcourt Brace Jovanovich, Publishers

London New York Toronto Sydney San Francisco

Copyright © 1982 Academic Press Inc. (London) Ltd.

ALL RIGHTS RESERVED

No part of this volume may be reproduced in any form, by photostat, microfilm, or any other means without written permission from the publishers.

Contents of Volume 14

Number 1, January 1982

SNOW, T. R., SAIVE, J.-J. AND HEMSTREET, T. M. A Study of the Temporal Relation between Intracellular pH and Contractile Performance in Toad Ventricular Strips during Hypercapnic Acidosis	1
OHARA, H., KANAIDE, H. AND NAKAMURA, M. A Protective Effect of Verapamil on the Calcium Paradox in the Isolated Perfused Rat Heart	13
THANDROYEN, F. T. Protective Action of Calcium Channel Antagonist Agents against Ventricular Fibrillation in the Isolated Perfused Rat Heart	21
BHALLA, R. C., GUPTA, R. C. AND SHARMA, R. V. Distribution and Properties of cAMP-Dependent Protein Kinase Isosymes in the Myocardium of Spontaneously Hypertensive Rat	33
PONCE-HORNOS, J. E., LANGER, G. A. AND NUDD, L. M. Inorganic Phosphate: its Effects on Ca Exchange and Compartmentalization in Cultured Heart Cells	41
ZAMANIS, A., VERDETTI, J. AND DE LEIRIS, J. Reduction of Ischemia-Induced Myocardial Necrosis in the Rat with Permanent Coronary Artery Occlusion under the Effect of Diltiazem	53
STATES, J. C. AND JANAKIDEVI, K. Poly (ADP-ribose) Polymerase Activity of Aortic Nuclei from Swine on Hyperlipemic Diet	63
BOOK REVIEWS	71

Number 2, February 1982

KARDAMI, E. AND GRATZER, W. B. Interaction of Cardiac Myosin and its Light Chains with Calcium Ions and Regulation of Binding by Phosphorylation	73
HOCH, F. L. Thyroid Control over Biomembranes. VII. Heart Muscle Mitochondria from L-Triiodothyronine-Injected Rats	81
HINES, J. L., OGUNRO, E. A., FERGUSON, A. G. AND LESCH, M. Cathepsin D Catalyzed Degradation of Cardiac Mitochondria. A Study of Enzyme Inactivation and Ultrastructure	91
BURT, J. M. Electrical and Contractile Consequences of Na ⁺ or Ca ²⁺ Gradient Reduction in Cultured Heart Cells	99
OUEDRAOGO, C. O., GARNIER, D., NARGEOT, J. AND POURRIAS, B. Electrophysiological and Pharmacological Study of the Inotropic Effects of Adrenaline, Dopamine and Tryptamine on Frog Atrial Fibres	111
HORACKOVA, M. AND VASSORT, G. Effects of Chloride Replacement in Cardiac Muscle: Mechanisms of Positive Inotropy	123
BOOK REVIEWS	131

Number 3, March 1982

TAYLOR, D. AND HOCHSTEIN, P. Reduction of Metmyoglobin in Myocytes	133
GERARDS, P., GRAF, W. AND KAMMERMEIER, H. Glucose Transfer Studies in Isolated Cardiocytes of Adult Rats	141
HUMPHREY, S. M., GAVIN, J. B. AND HERDSON, P. B. Catecholamine-depletion and the No-reflow Phenomenon in Anoxic and Ischaemic Rat Hearts	151

HASIN, Y., SAPOZNIKOV, D., STEIN, O. AND STEIN, Y. Effect of Fatty Acid Composition of Rat Heart Myocytes on their Electrical Activity . . .	163
RAPID COMMUNICATIONS	
MAN, R. Y. K. AND CHOY, P. C. Lysophosphatidylcholine Causes Cardiac Arrhythmia . . .	173
RONCA-TESTONI, S. AND BORGHINI, F. Degradation of Perfused Adenine Compounds up to Uric Acid in Isolated Rat Heart . . .	177
NICHOLS, J. R. AND GONZALEZ, N. C. Increase in Myocardial Cell cGMP Concentration in Pressure-induced Myocardial Hypertrophy . . .	181
NAYLER, W. G., THOMPSON, J. E. AND JARROTT, B. The Interaction of Calcium Antagonists (Slow Channel Blockers) with Myocardial Alpha Adrenoceptors . . .	185
DAUT, J. The Role of Intracellular Sodium Ions in the Regulation of Cardiac Contractility . . .	189
BOOK REVIEW . . .	193

Number 4, April 1982

LIEDTKE, A. J., NELLIS, S. H. AND WHITESELL, L. F. Effects of Regional Ischemia on Metabolic Function in Adjacent Aerobic Myocardium . . .	195
PINE, M. B., BORG, T. K. AND CAULFIELD, J. B. Regulation of Atrial Myocardial Cellular Volume During Exposure to Isosmotic High Potassium or Hyposmotic Media . . .	207
KOTAKA, K., MIYAZAKI, Y., OGAWA, K., SATAKE, T., SUGIYAMA, S. AND OZAWA, T. Reversal of Ischemia-induced Mitochondrial Dysfunction after Coronary Reperfusion . . .	223
TRANUM-JENSEN, J. AND JANSE, M. J. Fine Structural Identification of Individual Cells Subjected to Microelectrode Recording in Perfused Cardiac Preparations . . .	233
BOOK REVIEW . . .	249

Number 5, May 1982

KOIDL, B. AND TRITTHART, H. A. D-600 Blocks Spontaneous Discharge, Excitability and Contraction of Cultured Embryonic Chick Heart Cells . . .	251
WOJTCZAK, J. Influence of Cyclic Nucleotides on the Internal Longitudinal Resistance and Contractures in the Normal and Hypoxic Mammalian Cardiac Muscle . . .	259
KAMMERMEIER, H., SCHMIDT, P. AND JÜNLING, E. Free Energy Change of ATP-hydrolysis: a Causal Factor of Early Hypoxic Failure of the Myocardium? . . .	267
RINALDI, M. L., CAPONY, J.-P. AND DEMAILLE, J. G. The Cyclic AMP-dependent Modulation of Cardiac Sarcolemmal Slow Calcium Channels . . .	279
RAPID COMMUNICATIONS	
BELARDINELLI, L., VOGEL, S., LINDEN, J. AND BERNE, R. M. Antiadrenergic Action of Adenosine on Ventricular Myocardium in Embryonic Chick Hearts . . .	291

MASSON-PÉVET, M., JONGSMA, H. J., BLEEKER, W. K., TSJERNINA, L., VAN GINNEKEN, A. C. G., TREIJTEL, B. W. AND BOUMAN, L. N. Intact Isolated Sinus Node Cells from the Adult Rabbit Heart	295
RUIZ-CERETTI, E., CAILLÉ, J.-P. AND DORTICOS, F. The Diffusion and Electrogenic Components of the Membrane Potential of Rabbit Ventricle After Long Exposure to Different K_0	301

Number 6, June 1982

EDITORIAL

SCHREIBER, S. S., EVANS, C. D., ORATZ, M. AND ROTHSCHILD, M. A. Problems in Evaluating Cardiac Protein Synthesis	307
--	-----

REVIEW

CLARK, M. G., PATTEN, G. S. AND FILSELL, O. H. Evidence for an α -Adrenergic Receptor-mediated Control of Energy Production in Hearts	313
ASHRAF, M., ONDA, M., HIROHATA, Y. AND SCHWARTZ, A. Therapeutic Effect of Diltiazem on Myocardial Cell Injury during the Calcium Paradox	323
RESINK, T. J. AND GEVERS, W. Dephosphorylation of Myofibrillar Proteins in Actomyosin Preparations and in Isolated Perfused Rat Hearts After β -Agonist Withdrawal	329
HUNNEMAN, D. H. AND SCHWEICKHARDT, C. Mass Fragmentographic Determination of Myocardial Free Fatty Acids	339
WELTY, M. C., WELTY, J. D. AND MCBROOM, M. J. Effect of Isoproterenol and Taurine on Heart Calcium in Normal and Cardiomyopathic Hamsters	353

RAPID COMMUNICATIONS

GRINWALD, P. M. Calcium Uptake During Post-ischemic Reperfusion in the Isolated Rat Heart: Influence of Extracellular Sodium	359
ROBINSON, R. B. Action Potential Characteristics of Rat Cardiac Cells do not Change with Time in Culture	367

Number 7, July 1982

URATA, M. AND GOTO, M. Membrane Currents Related to Configuration Changes in the Action Potential of Frog Atrial Muscle in Na- and Ca-free Conditions	371
BARRON, E. A., MARKWALD, R. R. AND NATHAN, R. D. Localization of Sialic Acid at the Surface of Embryonic Myocardial Cells	381
PIPER, H. M., PROBST, I., SCHWARTZ, P., HÜTTER, F. J. AND SPIECKERMANN, P. G. Culturing of Calcium Stable Adult Cardiac Myocytes	397
IDELL-WENGER, J. A., GROTYOHANN, L. W. AND NEELY, J. R. Regulation of Fatty Acid Utilization in Heart. Role of the Carnitine-Acetyl-CoA Transferase and Carnitine-Acetyl Carnitine Translocase System	413
LUND, D. D., SCHMID, P. G., JOHANNSEN, U. J. AND ROSKOSKI, R., JR. Biochemical Indices of Cholinergic and Adrenergic Autonomic Innervation in Dog Heart: Disparate Alterations in Chronic Right Heart Failure	419

RAPID COMMUNICATIONS

- SCHRADER, J., THOMPSON, C. I., HIENDLMAYER, G. AND GERLACH, E. Role of Purines in Acetylcholine-Induced Coronary Vasodilation 427
- WINDISCH, H. AND TRITTHART, H. A. Isoproterenol, Norepinephrine and Phosphodiesterase Inhibitors are Blockers of the Depressed Fast Na^+ -system in Ventricular Muscle Fibers 431

Number 8, August 1982

EDITORIAL

- OPIE, L. H. Moral Issues in Medical Research 435
- FORSGREN, S.,¹ CARLSSON, E., STREHLER, E. AND THORNELL, L.-E. Ultrastructural Identification of Human Fetal Purkinje Fibres—a Comparative Immunocytochemical and Electron Microscopic Study of Composition and Structure of Myofibrillar M-regions 437
- MOORE, K. H., RADLOFF, J. F., KOEN, A. E. AND HULL, F. E. Incomplete Fatty Acid Oxidation by Heart Mitochondria: β -Hydroxy Fatty Acid Production 451
- BARTOLOME, J. V., TREPANIER, P. A., CHAIT, E. A. AND SLOTKIN, T. A. Role of Polyamines in Isoproterenol-induced Cardiac Hypertrophy: Effects of α -Difluoromethylornithine, an Irreversible Inhibitor of Ornithine Decarboxylase 461
- SEVERSON, D. L. AND HURLEY, B. Regulation of Rat Heart Triacylglycerol Ester Hydrolases by Free Fatty Acids, Fatty Acyl CoA and Fatty Acyl Carnitine 467

RAPID COMMUNICATIONS

- FORESTER, G. V., ROY, O. Z. AND MORTIMER, A. J. Enhancement of Contractility in Rat Isolated Papillary Muscle with Therapeutic Ultrasound 475
- ZIMMER, H.-G. Ribose Enhances the Isoproterenol-elicited Positive Inotropic Effect in Rats *in vivo* 479
- COKER, S. J., PARRATT, J. R., LEDINGHAM, I. MCA. AND ZEITLIN, I. J. Evidence that Thromboxane Contributes to Ventricular Fibrillation Induced by Reperfusion of the Ischaemic Myocardium 483
- WENDT-GALLITELLI, M. F. AND JACOB, R. Rhythm-dependent Role of Different Calcium Stores in Cardiac Muscle: X-ray Microanalysis 487
- BOOK REVIEW 493

Number 9, September 1982

EDITORIAL

- SMITH, H. J. The Need to Redefine Membrane Stabilizing Activity of Beta-Adrenergic Receptor Antagonists 495
- SUNG, R., STEPHENS, M., BLAYNEY, L. AND HENDERSON, A. Cardiac Hypertrophy and its Regression in Rat: Comparison of Morphological Changes in Response to Aortic Constriction, Iron Deficiency Anaemia and Isoprenaline 501
- OGUNRO, E. A., SAMAREL, A. M., FERGUSON, A. G. AND LESCH, M. Primary Structure Similarities in Canine Cardiac Cathepsin D Polypeptide Chains 513

HAWORTH, R. A., HUNTER, D. R. AND BERKOFF, H. A. Mechanism of Ca^{2+} -Resistance in Adult Heart Cells Isolated with Trypsin Plus Ca^{2+}	523
HUNTER, D. R., HAWORTH, R. A. AND BERKOFF, H. A. Verapamil-Sensitive Sodium Uptake in the Adult Rat Heart	531
ZÄHRINGER, J., PRITZL, N. AND STÄB, G. Quantitation of Cardiac Polysomal mRNA by Hybridization to (^3H) Poly(U)	539
RAPID COMMUNICATION	
KANTROWITZ, N. E., BRISTOW, M. R., MINOBE, W. A., BILLINGHAM, M. E. AND HARRISON, D. C. Histamine-Mediated Myocardial Damage in Rabbits	551
BOOK REVIEW	557
ANNOUNCEMENTS	557

Number 10, October 1982

ZÄHRINGER, J. AND KLAUBERT, A. The Effect of Triiodothyronine on the Cardiac mRNA	559
TOMERA, J. F. AND GEYER, R. P. Perfluorochemical Perfusion of the Rat Heart: <i>in vivo</i> and <i>in vitro</i>	573
GANOTE, C. E., ANGELO, J., SAFAVI, S. AND KALTENBACH, J. P. Protection from Irreversible Hypoxic Injury by Potassium Cardioplegia and Hypothermia: Effects on Contracture, Morphology and O_2 -Enzyme Release	587
STEINBERG, S. F. AND BILEZIKIAN, J. P. Identification and Characterization of Alpha_1 Adrenergic Receptors in Rat Myocardium with a New Iodinated Radioligand [^{125}I]IBE 2254	601
RAPID COMMUNICATIONS	
KRAUSE, E.-G. AND ENGLAND, P. J. Loss of the Cyclic AMP Accumulation Induced by Isoproterenol During Acute Ischaemia in the Isolated Rat Heart	611
KASS, R. S. AND SCHEUER, T. Slow Inactivation of Calcium Channels in the Cardiac Purkinje Fiber	615

Number 11, November 1982

EDITORIAL	
CORR, P. B., GROSS, R. W. AND SOBEL, B. E. Arrhythmogenic Amphiphilic Lipids and the Myocardial Cell Membrane	619
EDITORIAL	
KATZ, A. M. Membrane-Derived Lipids and the Pathogenesis of Ischemic Myocardial Damage	627
BLEEKER, W. K., MACKAAY, A. J. C., MASSON-PÉVET, M., OP'T HOF, T., JONGSMA, H. J. AND BOUMAN, L. N. Asymmetry of the Sino-Atrial Conduction in the Rabbit Heart	633
HIGGINS, T. J. C., BAILEY, P. J. AND ALLSOPP, D. Interrelationship Between Cellular Metabolic Status and Susceptibility of Heart Cells to Attack by Phospholipase	645
TANZ, R. D., RUSSELL, N. J., BANERIAN, S. P. AND SHARP, V. H. Ouabain-induced Tachyarrhythmias and Cell Damage in Isolated Perfused Guinea-pig Hearts: I. Protection by Propranolol	655

DRIEDZIC, W. R., STEWART, J. M. AND SCOTT, D. L. The Protective Effect of Myoglobin During Hypoxic Perfusion of Isolated Fish Hearts	673
RAPID COMMUNICATION	
BOOR, P. J. AND NELSON, T. J. Biotransformation of the Cardiovascular Toxin, Allylamine, by Rat and Human Cardiovascular Tissue	679
LETTERS TO THE EDITOR	
ARNIM, T. V. AND WELMAN, E. Propranolol in Ischaemic Reperfused Hearts	683
MANNING, A. S. AND HEARSE, D. J. Reply to Above Letter	684
ANNOUNCEMENTS	685

Number 12, December 1982

EDITORIAL

VENTER, J. C. Monoclonal Antibodies and Autoantibodies in the Isolation and Characterization of Neurotransmitter Receptors: The Future of Receptor Research	687
CUTILLET, A. F. Regression of Myocardial Hypertrophy: III. Alterations in Left Ventricular Performance	695
PANG, D. C. AND SPERELAKIS, N. Veratridine Stimulation of Calcium Uptake by Chick Embryonic Heart Cells in Culture	703
IMAMURA, I., JAMES, T. N., SCULLY, K. T., HAGEMAN, G. R. AND URTHALER, F. Ultrastructure of a Coronary Chemoreceptor of Dogs and Cats	711
WASSERSTROM, J. A. AND FERRIER, G. R. Effects of Phenytoin and Quinidine on Digitalis-Induced Oscillatory Afterpotentials, Aftercontractions, and Inotropy in Canine Ventricular Tissues	725

RAPID COMMUNICATIONS

FERRARI, R., DI LISA, F., RADDINO, R. AND VISIOLI, O. The Effects of Ruthenium Red on Mitochondrial Function During Post-Ischaemic Reperfusion	737
SATO, M., OHASHI, M., METZ, M. Z. AND BING, R. J. Inhibitory Effect of a Calcium Antagonist (Diltiazem) on Aortic and Coronary Contractions in Rabbits	741
LETTER TO THE EDITOR	
LEWARTOWSKI, B., PYTKOWSKI, B., PROKOPCZUK, A. AND WASILEWSKA-DZIUBNSKA, E. Calcium Exchange During Single Excitation of Guinea-Pig Ventricular Muscle	745